

## **THE NEXT STEPS TOWARD THE LAST MILE**

Prepared for the 120<sup>th</sup> Maine Legislature  
Joint Standing Committee on Business and Economic Development  
Joint Standing Committee on Utilities and Energy

Prepared by the Telecommunications Working Group

December 5, 2001



## **ABSTRACT**

This study was commissioned by the 120<sup>th</sup> Maine Legislature to study the deployment of advanced telecommunications capabilities in the State of Maine. Although the focus of the survey is telecommunications, it is examined through an economic development lens to consider the impact of advanced telecommunications on the future economic success of the people of Maine. The Telecommunications Working Group, with guidance from an Advisory Panel, researched Maine's current telecommunications infrastructure and compiled a list of recommendations for the consideration of Maine State Government.

### **LD 1632 Advisory Panel Members**

Steven Levesque, Commissioner, Department of Economic and Community Development (Chair)  
Yellow Breen, Department of Education  
Gerald Dube, University of Maine  
William Black, Office of the Public Advocate  
Phil Lindley, Public Utilities Commission  
Brett Doney, Growth Council of Oxford Hills  
Diane Tilton, Sunrise County Economic Development Commission  
Senator Edward Youngblood, Maine Science and Technology Foundation  
Robert Souza, Telephone Association of Maine  
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Robert Ho, Maine Rural Development Council  
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## Telecommunications and Maine's Economic Development

**“Science and technology multiply around us. To an increasing extent, they dictate the languages in which we speak and think. Either we use those languages, or we remain mute.”** J. G. Ballard; British novelist

History has proven that the development of thriving societies is contingent upon the cultivation of infrastructure. In colonial times, the medium was the seaport and waterway. Burgeoning communities then followed suit, settling at the water's edge. Industrial age communities centered their enterprises near the railroad junctions. As time advanced and technology evolved, the quality and availability of roads became necessary to economic and societal success. The medium transforms as human civilization evolves. Those communities who evolve equal to or faster than the rate of technological advancement will reap the benefits of economic success.

Again, we find ourselves at the cusp of another turning point. This new direction will allow every citizen to participate in the worldwide community and economy. The advent of the Internet and high-speed data transmissions has created unprecedented opportunities for citizens with access to this technology. Rather than asphalt, the new mediums are glass, copper, and radio waves and the new commodity is information. An integral part of Maine's economic future is reliant upon our ability to provide this information infrastructure at an advanced level.

Maine is very fortunate to have an excellent statewide telecommunications system, from cable broadband in Aroostook to wireless broadband access in coastal regions. In order to continue to accelerate and enhance sustainable deployment of broadband infrastructure, one can either look first at expanding supply through ordering and paying for deployment by taxes and regulatory assessments; or one can focus on increasing demand for broadband, a slower but more sustainable and efficient approach and one better suited to Maine's needs.

Regional economic development specialists and telecommunications executives both agree that key to boosting the Maine economy is the creation of a highly skilled labor force. Average Maine businesses are not clamoring for more bandwidth; however, they are looking for deeper labor pools. Yet, ignoring telecommunications deployment and focusing exclusively on workforce development will unquestionably leave Maine ill prepared in this information age. As our economy grows, we will become more bandwidth reliant.

The creation of a “next generation” work force is directly related to the quality of education our state offers. In this high-tech age, it is impossible to study one function of society without considering the technological aspects. Therefore, although the next steps in the economic development of Maine will be cultivating skilled workers, it is critical to examine our technology infrastructure and our ties to the new world digital economy.

Other states and countries are taking the time to assess their technological advances and shortcomings, and will adjust accordingly. If Maine expects to raise the quality of its economy, it is clear that staying with the curve will assure status quo; moving ahead of the curve will build prosperity; and slipping behind could lead to economic depression. Maine must rise to the challenge and think outside physical borders to foster opportunity and maintain an unparalleled quality of life.

## Reasons for Study

The Telecommunications working group and advisory panel were created by Resolves 2001, chapter 67, sponsored by Senator Richard Bennett. The legislation directed the two groups to:

1. Identify specific geographic areas where advanced telecommunications capability is deployed at a significantly lower rate than the rest of the State;
2. Study the investment in telecommunications facilities with advanced capabilities in rural areas, including an assessment of the various levels of capability deployed under different technologies, the bandwidth capabilities of the deployment and whether or not comparable bandwidth is deployed consistently;
3. Study the availability of telecommunications backbone networks and “last mile” facilities with advanced capability in potentially underserved areas;
4. Study the technological, economic, and public policy barriers to the wide deployment of broad bandwidth to all parts of the State;
5. Study the capability of various technological enhancements to existing wired and wireless networks to provide “last mile” advanced telecommunications capability in rural areas; and
6. Identify successful strategies that have been implemented in other states and regions to deploy advanced telecommunications capability to rural areas.

The Telecommunications working group was directed to consider the information and advice provided by the advisory panel and report its findings and recommendations to the Joint Standing Committee on Business and Economic Development and the Joint Standing Committee on Utilities and Energy.

The resolve establishing the study groups and report originated in the Joint Standing Committee on Business and Economic Development as a result of its consideration of the next public policy steps needed to assist advanced telecommunications deployment to support healthy economic development in the State of Maine.

The resolve provided for the formation of the two groups directing the membership to be as follows:

### Telecommunications Working Group

1. The Chief Information Officer in the Department of Administrative and Financial Services; **Harry Lanphear, Chair**
2. The State Economist; **Laurie Lachance**
3. The Director of Operations and Technology, Office of the Governor; **Jim Doyle**

4. The President of the Maine Science and Technology Foundation or the president's designee; **Michael Ryan**

#### Advisory Panel

1. The Commissioner of Economic and Community Development or the commissioner's designee; **Steven Levesque, Chair**
2. The Commissioner of Education or the commissioner's designee; **Yellow Light Breen**
3. The Chancellor of the University of Maine System or the chancellor's designee; **Gerald Dube**
4. The Public Advocate or the Public Advocate's designee; **William Black**
5. The chair of the Public Utilities Commission or the chair's designee; **Phil Lindley**
6. Two representatives from regional or county economic development organizations in the State, appointed by the chair of the working group; **Brett Doney & Diane Tilton**
7. A member from the Board of Directors of the Maine Science and Technology Foundation, designated by the board; **Sen. Edward Youngblood**
8. A member of the Board of Directors of the Telephone Association of Maine or that member's designee, appointed by the chair of the working group; **Robert Souza**
9. A member of the Maine Telecommunications Users Group or that member's designee, appointed by the chair of the working group; **Curt Sweet**
10. Four representatives of the telecommunications and Internet service providers industry, appointed by the chair of the working group; **Fletcher Kittredge, Barry McCrum, Daniel Breton, & John McCatherin**
11. A member of the board of the Electronic Commerce Forum of Maine, appointed by the chair of the working group; **Tim Masse**
12. The Executive Director of the Maine Rural Development Council or the executive director's designee; and **Robert Ho**
13. The State Director of the United States Department of Agriculture's Rural Development Program in this State or the director's designee. **Michael Aube**

The Telecommunications working group met several times in Augusta to set the foundation for the study. The advisory panel met in full on two occasions in Augusta to assist the working group in the formation of their assessments and recommendations. Several supplementary interviews with industry representatives also took place to clarify questions of working group members.

## **What is Advanced Telecommunications Capability? Where Does Maine Stand?**

The universally accepted definition of advanced telecommunications capability was defined in Section 706 (b) of the Telecommunications Act of 1996. Broadly defined, advanced capability was “high speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology.”

Specifically, the definition of advanced telecommunications capability is the two-way transmission of data in excess of 200 kbps in the last mile. The most common transmission mediums are cable, digital subscriber line (DSL), terrestrial wireless technology, and satellite broadband. The download transmission rates range from satellite technology at 400 kbps to DSL at nearly seven Mbps.

Maine has a similar variety of technologies available for both home and business usage. As for the status of broadband accessibility, such services are available in nearly 100% of Maine households. However, not every technology is offered throughout the state due to a host of technological and geographical limitations. The assertion that Maine enjoys statewide broadband coverage is true, if the consumer is prepared to pay market rates for installation, equipment, and on-going service.

### **DSL – Digital Subscriber Line**

DSL technology, albeit a popular high-speed transmission method, has strict technological limitations. Data traffic is transmitted through slightly modified copper telephone line. To maintain acceptable data transmission rates and quality, consumers cannot be situated more than 18,000 feet from the nearest communications office (CO) where Digital Subscriber Line Access Multiplexers (DSLAMs) connect the data signal to the backbone network.

Currently, DSL capability is available in most urban communities in Maine from a variety of service providers. Describing the exact deployment footprint for digital subscriber line service is difficult due to its technological limitation. For example, DSL is available in the City of Lewiston; however, not all parts of Lewiston are within the specified distance from a provider's remote office. DSL is a very efficient and effective technology, but an extremely costly solution in rural areas. Due to the infrastructure expense, a critical mass of consumers must be present to keep costs at reasonable levels.

### **Cable Broadband**

Cable broadband, transmitted through fiber optic/coaxial cable, is currently the most popular medium for advanced telecommunications access. It is capable of extremely high speeds, but, like DSL, is weighed-down with distance limitations. Even with periodic line amplifiers, quality cable broadband service is limited to a distance of 16,000 feet from its node.

It is difficult to precisely describe the footprint of cable broadband access coverage. Although cable access may be deployed in a certain community, it depends upon which streets and roads are wired with the fiber/coaxial cable and their distance from the node. For this reason, cable is an expensive infrastructure investment for sparsely populated areas. Deployment of this technology has been and will continue to be dictated by market forces and critical mass. Cable access in Maine is widespread throughout the state, yet, due to distance restriction, limited to town centers rather than the rural parts of communities.

### **Wireless Broadband**

Wireless broadband technologies transmit data via radio waves from tower antennas, much like cellular phone networks. The greatest advantage of fixed wireless systems is the relatively low capital investment needed to bring a signal to the consumer. Two-way transmission rates can reach 1.5Mbps. The major disadvantages to fixed wireless systems are geographical line of sight restrictions and adverse weather conditions.

Maine enjoys several fixed wireless broadband networks. In fact, some areas where traditional technologies cannot transmit, wireless fills the gap. For example, rugged coastal areas would require unimaginable capital investments to provide DSL or cable access; however, without the limitation of wires, a fixed wireless network can provide high-speed service at a reasonable rate. From Aroostook County to the Midcoast region and Greater Portland, wireless broadband is available.

### **Satellite Broadband**

Satellite access to the Internet is relatively new to the broadband market; however, industry experts expect the demand for this technology to sharply increase over the next two years. The advantage to satellite access is the virtual elimination of distance issues. Data is transmitted from a hub site, to a satellite orbiting over 20,000 miles above the Earth's surface, and then to the consumer.

Until recently, satellite technology could only support downstream communications. Upstream transmission was achieved through the consumer's phone line. Technology has evolved to the point that transmission is two-way with downstream speeds reaching 500kbps and 150kbps upstream. At present, satellite broadband does require a significant investment by the consumer; however, as with all new technologies, prices should moderate as demand increases.

Satellite technology puts the access debate to rest, for it is a global network and access is available throughout Maine. The only technological limitation is the satellite dish placement. The dish must have a clear, unobstructed view of the southern sky. Inclement weather can also degrade transmission quality.

## **Demand Aggregation & Deployment**

After consulting with telecommunications industry representatives as well as economic development professionals, it is clear that broadband deployment to every structure in Maine is, at the current time, making noticeable strides and keeping up with commercial demands.

Larger telecommunications providers are clear that they are willing to deploy broadband capabilities to anyone who demands the service - statewide; however, the consumer must be willing to remit the going rate for the deployment. This would be a paltry investment for the entrepreneur situated on the downtown peninsula of Portland, but would most certainly necessitate a sizable capital investment for an enterprise in Oxbow or Kossuth. Several economic development specialists, who work in the field statewide, attest that the current telecommunications structure is meeting demand with limited exceptions. They have not heard an outpouring of discontent from prospective businesses in rural areas worried about the delay in broadband capabilities.

### **Strategic Deployment & FirstPark**

However, it is also very clear that targeted deployment where demand is present in a high concentration is the preferred method for building out advanced telecommunications capability. A good example of such an investment is the FirstPark economic development project in Oakland<sup>1</sup>. Twenty-four municipalities are sharing the risk of developing a large-scale business park. They will share the cost, risk, and hopeful benefits. The interweaving of telecommunications is ever present in this project with the designation of the endeavor as a SmartPark by Verizon.<sup>2</sup> This shows the willingness of private telecommunications companies to be involved not only in the economic development in Maine, but also in the targeted deployment of broadband communications to maximize investment value.

FirstPark boasts a wide range of technology capabilities including the following:

- T1                      transmission capacity of 1.544Mbps
- DS3                    transmission capacity of 45Mbps
- Frame Relay        transmission capacities from 128Kbps to 1.544Mbps
- ATM                    transmission capacities of 45Mbps
- SONET                transmission capacities from 51.84Mbps to 13.22 Gbps

FirstPark is an excellent example of aggregating demand for advanced telecommunication capability to benefit area communities, rural and urban.

### **Loring Commerce Centre**

Another excellent example of targeted deployment in a rural area for economic development reasons is the Loring Commerce Centre in Limestone<sup>3</sup>. In order to attract major business

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<sup>1</sup> <http://www.firstpark.com>

<sup>2</sup> [http://www.firstpark.com/current\\_pages/verizon.htm](http://www.firstpark.com/current_pages/verizon.htm)

<sup>3</sup> <http://www.loring.maine.com>

tenants, it is critical to have the ability to offer high-tech accommodations such as advanced telecommunications capability.

Loring has the capability to offer fiber optic access to all business tenants who require advanced telecommunications access. AT&T assisted with the telecommunications development by adding a POP (point-of-presence) in Presque Isle, connecting Aroostook County to the higher-speed information highway. Loring Commerce Centre officials describe Loring businesses as “heavily reliant” upon the Internet and advanced telecommunications.

The Defense Finance and Accounting Service (DFAS)<sup>4</sup> center provides finance and accounting service to over twenty military installations from the Loring complex. DFAS relies upon broadband access to perform much of their workload, using both fiber infrastructure as well as satellite technology.

Another example of solid telecommunications infrastructure luring business to rural Maine is Sitel Corporation, a call center with strong presence at the Loring Commerce Centre. Sitel’s decision to expand its operations to Loring was also reliant upon the level of telecommunications capability offered. Without the addition of a POP in Presque Isle, as well as SONET ring redundancy, a call center operation in Aroostook County would not be a feasible business venture.

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<sup>4</sup> <http://www.dfas.mil/agency/centers/dfasde/de2index.htm>

## **Strengthening Service Centers Through Strategic Telecommunications Investment**

Over the past few years, a tremendous amount of research has been undertaken to analyze the manner in which Maine's communities are growing and how these patterns of growth are changing the physical landscape as well as the state's social, cultural and economic fabric. Whereas in 1960 only 36% of our population lived in suburban or rural areas, presently, nearly 56% live out in the more rural areas. The dramatic movement of Maine's population out of the "urban" hubs and into the suburban and rural areas is highly disturbing on two fronts. First, this pattern of growth is extremely expensive leading to the build-out of redundant infrastructure (roads, sewerage systems, schools) and costing Maine taxpayers an additional \$50-\$75 million annually in additional maintenance and operating costs (plowing, bussing, paving). Secondly, we have grown to understand that, on several fronts, Government policies have encouraged this type of development, offering, in one form or another, incentives to "sprawl."

Great strides have been made to raise the level of awareness of this critical issue and to systematically re-examine Government policies that inadvertently promote this costly development pattern. One of the major steps taken towards addressing this issue was to identify the communities in Maine that provide the vast majority of jobs, medical, cultural and retail services and to take necessary steps to strengthen these communities. These 69 communities, called "service centers", vary tremendously in size and appearance, but share three attributes: 1) they are job centers - importing workers, 2) they are retail centers - with sales exceeding the needs of the local population, and/or 3) they offer an array of social, cultural, health and financial services to the surrounding region.

In many areas including education, transportation, and housing, steps have been taken to ensure that policies are developed in a manner that strengthen service center communities and discourage sprawl, an approach that is known as "smart growth". Telecommunication policy development should also consider and support the smart growth initiatives. With the ever-increasing importance of technology in our economic underpinnings, a robust, state-of-the-art telecommunications infrastructure is absolutely critical to Maine's future. Given limited resources, wise and strategic telecommunications investments in the State's service center communities are essential. For that reason, this report recommends that State funded telecommunications investments and incentives should be targeted in such a way as to strengthen service center communities and to discourage sprawl.

## What Has Been Done?

### ATM Distance Learning

In August of 1995, the State of Maine issued a Request for Proposals (RFP) to establish an infrastructure for a statewide, broadband interactive video and data network. The idea was to connect every school in Maine to a statewide virtual classroom network. The system would provide enough bandwidth for two-way, interactive, full-motion video for distance learning applications and resource sharing. This project would allow a student in Van Buren to participate in a class in Sanford as if he or she was physically present. With an ATM (asynchronous transfer mode) system strung throughout the state, geography would be less of a barrier for the education of Maine's students.

Later in 1995, Maine voters approved a \$15,000,000 bond issue to fund learning technology programs and investments. The monies paid for switching equipment and infrastructure in local schools to prepare for the deployment of a statewide broadband network. In March of 1996, five pilot sites were announced and the negotiations with NYNEX were near completion on the network design and construction. Currently, ATM is deployed and operational in 61 sites. The network is evenly distributed throughout Maine from north to south, urban to rural.

The ATM deployment project is an excellent example of how the State of Maine used educational assets as a catalyst for the deployment of advanced telecommunications capability in all parts of Maine. The RFP specified a non-distance sensitive contract, allowing any school regardless of geography to participate. The RFP also brought together enough users to make deployment financially worthwhile for Verizon. User consolidation is an important strategy in encouraging investment. This necessitated the development of advanced infrastructure wherever schools demanded. It is clear that 1995 market forces would not have been nearly strong enough to entice private enterprises into deploying such an advanced telecommunications structure from Eastport to Bethel and all points between. [See *Appendix B*]

### Maine Marine Research Network

The Maine Science and Technology Foundation in conjunction with the Research Capacity Committee (RCC) administered \$1,000,000 of the Research and Development Bond Issue approved by the voters of Maine in 1998. These funds were designated in the Bond to *"provide funds to enhance Internet connections among public and private educational institutions conducting marine research and nonprofit marine research institutions."* Much like the School ATM network deployment, the marine connectivity initiative provides the technological infrastructure to cultivate collaborative opportunities between marine study sites.

The primary focus of the marine connectivity initiative is to enhance Maine's marine research and development capacity and resulting competitiveness. Improving marine connectivity will enhance both access to and the flow of research and development information.

The following institutions received awards to participate in the marine network using either compressed video or ATM sites under an RFP issued by the RCC:

- Department of Marine Resources – Boothbay Harbor, Hallowell, and the Lamoine Laboratory
- Downeast Institute for Applied Marine Research and Education, Beals ME
- Island Institute's Working Waterfront, Rockland ME
- Maine Maritime Academy, Castine ME
- Mount Desert Island Biological Laboratory, Salisbury Cove ME
- University of Maine, Darling Marine Center, Walpole ME
- University of Maine at Machias, Machias ME
- University of Maine School of Law at the University of Southern Maine, Portland ME
- University of Maine School of Marine Sciences, Orono ME
- Wells National Estuarine Research Reserve, Wells ME

Additionally, all equipment purchased through this effort is compatible with the School ATM Network and a biomedical research network involving the University of Maine, Jackson Laboratory, Maine Medical Center Research Institute, the University of Southern Maine, and Mount Desert Island Biological Network.

### **Maine Learning Technology Endowment**

In March of 2000, Governor Angus S. King, Jr. unveiled the Administration's view on the future of education technology in Maine. The initiative would place portable wireless computing devices in the hands of 7<sup>th</sup> and 8<sup>th</sup> grade students and teachers in Maine public schools. With the support of the Maine Legislature, \$30 million was appropriated to create an endowment that will fund the program.

The vision behind the endowment is very simple: to provide the tools and training necessary to ensure that Maine's students become one of the most digitally capable groups in the world. With the change at both the national and state level to an economy and society that focuses more on knowledge and intellectual ability instead of brawn and manpower, it's imperative that a major part of all students' education focus on using technology as a tool for teaching and learning.

The primary focus of this program is to nurture the development of a high-skill labor force at an early age. With an educated and technologically experienced workforce, Maine will posture itself to attract businesses that will create high skill, high pay career opportunities needed in this fast-paced, ever-changing information age.

### **Maine Schools and Libraries Network**

The Maine School and Library Network (MSLN) provides Internet service to the schools and libraries of the State of Maine. This network was created as the result of a ruling by the Maine Public Utilities Commission in a rate case that required NYNEX to fund telecommunications services for public libraries and accredited schools in the state. The project was originally funded for 5 years at a rate of \$4 million per year starting from June 1, 1995. A Board of Advisors that reports regularly to the PUC on the status of the project directs the services of the MSLN. The funding arrangement expired in June of 2001,

necessitating a new revenue stream. Since June, funding through the federal E-Rate program and the Maine Telecommunications Education Access Fund sustain the network.

The network has been widely utilized statewide, aiding classroom instruction and expanding library capabilities. Schools with access to the network are able to provide Internet applications within the classroom, opening an endless stream of information on any possible topic of study. Before the implementation of the MSLN, a majority of schools and libraries in Maine were lacking any connection to the Internet.

In the context of advanced telecommunications deployment, MSLN has the potential to generate a market force. When students are exposed to high-speed access in the schools, they will begin to create a demand for broadband access at home, which will push the market to induce further infrastructure investment and network build-out. Programs that expose demographic groups (in this case - students) to technology exert a residual effect of demand aggregation.

## What Have Other States Done?

Broadband deployment to rural areas has been a challenge to states across the nation. The struggle between the ability to ensure equal access to the information highway and the costs associated with such deployment continue to be a challenge even for states who were aggressive (and in many instances creative) in their initial push to reach the last miles.

### Iowa Communications Network

Iowa determined that the value of deployment for their citizens was so great that they would build, maintain, and own their network. While their primary goal of this deployment was to provide rural citizens with the same educational opportunities that those in the urban areas were provided with, the initiatives that were spawned from this effort benefited citizens throughout the state.

- Hospitals, state and federal governments, libraries and schools were given the ability to communicate through high quality, full-motion video and high speed internet connections.
- Seriously ill patients could communicate with the medical professionals they needed to without being forced to endure a long commute.
- Telejustice efforts allowed judges, law enforcement officials, and those requiring specific services of the court to hold proceedings without all being in the same courtroom. This proved to increase the number of cases heard simply because travel time was decreased.
- The Venture Network of Iowa was created and that allowed entrepreneurs to present their business ideas to venture capitalists and gain statewide exposure.

Through the establishment of a statewide network, many of their objectives related to educational opportunities were reached. Adults who had found continuing their education difficult due to issues related to family commitments, as well as distances to appropriate higher learning institutions, had barriers brought down. The flexibility of distance learning meant that they could continue their education without relocating or failing to meet personal commitments.

The benefits to the citizens as reported are impressive. However questions remain including, what is the eventual cost to the citizens to have a state own the network? Can, or should, the public sector take on the support and maintenance of such an expansive network? If so, how is such an undertaking sustained indefinitely?

### North Carolina

North Carolina also wanted to provide their rural areas with equal access to information and allow them to participate fully in opportunities offered by the digital economy. However, they recognized the limitations of what the state could realistically provide, as well as what the private sector would be willing to offer.

When they sought the expertise of the public sector, they specifically noted that they wanted the state to be “the provider of last resort” (with an appropriate exit strategy). They also asked for providers to tell them up front which rural areas would simply not be considered economically viable for a significant capital investment.

### Kentucky

Kentucky boasts that BellSouth has provided them with the most advanced network in the country. BellSouth has invested millions into new switching and transmission technologies that give the citizens of Kentucky extensive and reliable access to the information highway and they feel the infrastructure that they’re investing in now will be as important to the economy of tomorrow as the roadways are today. Although there are multiple reasons for the success they report, BellSouth and Kentucky officials credit some of it to the Telecommunications Act of 1996, which opened up new opportunities for BellSouth to provide businesses and citizens with total telecommunication services.

### Arizona

Arizona’s Partnership for the New Economy (APNE) studied the impediment to Arizona’s participation in the new economy and identified broadband rural connectivity as a foundational necessity. Arizona’s state project TOPAZ (Telecommunications Open Partnerships for Arizona) has committed to build out to every corner of Arizona. Although many areas of the state have very limited populations, they feel sure that by partnering with the private sector to reach all areas they will not only increase access of individuals to information, but will stimulate economic growth throughout the state, with those rural communities in particular benefiting.

Models for rural deployment within states vary depending upon multiple factors, not the least of which is funding. Do states allow the market to drive deployment, or do they assist? If they do assist, through which avenues can they best serve the effort? Moreover, what is the whole cost beyond the initial deployment?

There is no one answer to any of these questions. Proven solutions can work in one economy, and fail in another. What is clear and consistent across the states is the fact that broadband access, especially in the underserved areas, has proven to provide citizens with services and information that allow them to improve the quality of their lives. It has allowed rural businesses that otherwise may not have had the opportunity, to expand their markets and to grow on a wider scale. In addition, statewide access provides government programs with another, more cost effective, method of delivering their services.

The benefits we recognize today will only grow over time as the digital economy continues to expand. The effort we put forth should be ongoing and multifaceted, ensuring that we do not lose sight of the less populated areas and the value in providing all citizens of Maine with equal access.

## **Taxation Policy**

Many policy experts equate the rural deployment of broadband access to the rural electrification efforts of the early 20<sup>th</sup> Century. In the case of electricity, the federal government was an active partner in the rollout of service to the rural regions of the U.S. The government subsidized the infrastructure resulting in the nationwide deployment of household electricity. The question that remains is whether the development of broadband rises to the same level of necessity as electricity. To subsidize a non-necessity would utilize public money to finance private market endeavors.

In Maine, two major taxation steps have been taken by state government to assist telecommunications development and high technology investment. This tax policy is an example of a tempered response to the taxation questions posed above. The high-technology investment tax credit and the rescheduling of the telecommunications property tax have assisted the growth of telecommunications infrastructure without infringing upon natural market forces. Maine State Government has taken prudent and effective course through this policy arena. Looking at the two tax policy shifts give a good picture of a high-technology friendly state, which allows competitive market forces to command the natural rate of investment and deployment.

### **High-Technology Investment Tax Credit**

First enacted in 1997 by the 118<sup>th</sup> Maine Legislature, the high-tech tax credit was designed to attract businesses to Maine involved in computers and the Internet. If the state could entice high-tech enterprises to base operations in Maine, higher skill, higher paying jobs would be available to residents. The credit was amended by the 120<sup>th</sup> Legislature, redefining the requirements to qualify, after realizing the credit encompassed a much wider group of businesses than originally intended.

The credit is equal to the adjusted basis of eligible equipment on the date first placed in service in Maine. The eligible high-tech activities range from design and manufacturing computer software, equipment, and supporting communications components to the provision of Internet access services and advanced telecommunications services. Generally, the credit may not exceed \$100,000 per year, unless current-year credit base is less than \$100,000, in which case, previous years' carryover up to \$200,000 may be allowed.

This tax credit program is very helpful to businesses making significant capital investment in Maine. Moreover, the credit entices investment by smaller companies who may not ordinarily make a large investment in infrastructure.

### **Telecommunications Property Tax**

With the further intent of encouraging capital investment in telecommunications infrastructure, the 119<sup>th</sup> Maine Legislature began to adjust the tax rate schedule on telecommunications personal property. The mil rate will remain at the current level of 27

mills for property assessed before December 31, 2002; however, the rate will reduce over a period of seven years.

For assessments made in 2003-----	26 mills
For assessments made in 2004-----	25 mills
For assessments made in 2005-----	24 mills
For assessments made in 2006-----	23 mills
For assessments made in 2007-----	22 mills
For assessments made in 2008-----	21 mills
For assessments made in 2009+-----	20 mills

This reduction in property tax, over time, will make capital investments more attractive to telecommunications companies. These investments will provide additional advanced services to the consumer, improving connectivity to Maine citizens.

The Legislature, with the support of the current Administration, has made significant progress in providing tax relief to the telecommunications industry with the hope that continued capital investment occurs in Maine. Clearly, with several hundred million dollars of recent and planned investments in Maine, the telecommunications industry is committed to the improvement and expansion of current networks.

## Recommendations to 120<sup>th</sup> Maine Legislature

The consensus of public opinion among industry and economic development representatives is that Maine has no major advanced telecommunications problems or gaps. In fact, Maine has the ability to tout a state-of-the-art statewide telecommunications system that surpasses most states of comparable size and demography. Additionally, many feel that Maine's telecommunications offerings would rate among the top ten states in the country.

Consider viewing this survey as an opportunity to explore proactive methods to maintain the State's above average infrastructure and nourish our burgeoning economy. The Telecommunications working group has formulated the following recommendations for the Maine Legislature to consider in the future sessions. These suggestions should keep Maine focused on a productive agenda to successfully weather the next wave of technological advances.

**RECOMMENDATION 1:** Continue to pursue the goals outlined by the 1999 Task Force to Study Telecommunications Taxation to encourage sustained capital investment by the telecommunications industry. Investments should be targeted to service centers consistent with the approach discussed in the body of this report.

**RECOMMENDATION 2:** Continue to encourage technology education for Maine's next generation labor pool. Advanced understanding of technology by a statewide labor force will entice environmentally-friendly information technology industries to Maine, bringing high-tech, high-paying jobs to Maine's citizens and driving broadband deployment naturally through increasing demand.

**RECOMMENDATION 3:** The Maine Telecommunications Users Group (MTUG) and Maine Public Utilities Commission, in conjunction with the administration should continue to monitor federal regulatory legislation that could deter the ongoing deployment of broadband to Maine's citizens and businesses.

**RECOMMENDATION 4:** Target on incentives to encourage the aggregation of demand for advanced telecommunications capability. The Maine State Chamber of Commerce as well as the Regional Councils of Government should play an expanded role in facilitating the deployment of broadband to regional areas through aggregation efforts.

**RECOMMENDATION 5:** Under the auspices of the Office of the Public Advocate, facilitate the publication of a consumer guide to Internet service modeled after the successful Ratewatcher's Guide for telephony and electric consumers.

**RECOMMENDATION 6:** Let the private sector take the lead. The business community is making significant investments to this market as evidenced, for example, by Verizon's ongoing expenditures, as well as Adelphia's \$150 million expenditure by the end of 2002. Market forces, therefore, appear to be working fine within the existing state and federal policy framework.

**RECOMMENDATION 7:** Give the private sector the time to work. To date, there have been no documented projects where lack of broadband has stopped a current or new business from coming to Maine. The Department of Economic and Community Development has done an exceptional job of partnering with the broadband industry and can help guide businesses in their relationships with these broadband providers. We encourage these partnerships to continue as this market evolves over time.

**RECOMMENDATION 8:** Be mindful that future telecommunications policy encourages work concurrent with the State's smart growth policies. Deployment in downtowns and service centers is not only more economic due to population density and business concentration, but also avoids inadvertently increasing sprawl.